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10/527,005	03/07/2005	Luigi Agarossi	IT 020027	2248

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EXAMINER

HERRERA, DIEGO D

ART UNIT	PAPER NUMBER
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2617

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07/17/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,005	Applicant(s) AGAROSS ET AL.	
	Examiner Diego Herrera	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/3/2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-7 is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 8-11, 13-20 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claim 1 is objected to because of the following informalities: parenthesis at the end of the claim is not needed or it is incomplete. Appropriate correction is required.

Claim 2 objected to because of the following informalities: e) and f) need deletion. Appropriate correction is required.

Claim 3 is objected to because of the following informalities: a)-f), delete for consistency throughout claims. Appropriate correction is required.

Claim 4 is objected to because of the following informalities: c)-f), need to be deleted. Appropriate correction is required.

Response to Amendment

Claims 1-11, and 13-20 have been amended. Claim 12 has been cancelled.

Response to Arguments

Applicant's arguments filed 1/3/2008 have been fully considered but they are not persuasive. Examiners disagrees about claim 1 been amended to include limitations of claim 12. In regards to applicants' arguments, the cited reference of Giallorenzi et al. has the required standards to communicate information through layers by modulating and channel coding as claimed in claims 1 and 13 which describe rates and bandwidth allocation.

Allowable Subject Matter

Claims 5-7 are allowed due to the fact of having an equation describing the Rate_(N) required for each available N.

Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Giallorenzi et al. (US 7190683 B2).

Regarding claim 1. Giallorenzi et al. discloses a method for supervising an OFDM wireless communication system including a MAC layer and a PHY layer (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer), said PHY layer including a supervisor unit (title, abstract, col. 4 lines: 10-20, Giallorenzi et al. teaches a media access control layer link adaptation, it is well known in the art that the MAC layer will supervise rates of error for quality purposes especially dealing between PHY layer), the method comprising the act of:

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inputting into the supervisor unit a first set of input data comprising a target bit rate (Target_Rate) (fig. 4, col. 3 lines: 37-56, col. 9 lines: 14-25, Giallorenzi et al. teaches table of units as shown there are parameters entered and calculated) and a target bit error rate (Target_BER) (fig. 4 col. 9 lines: 14-25, Giallorenzi et al. teaches parameters of data rates being calculated and reported); processing by the supervisor unit the first set of input data (fig. 4 col. 9 lines: 14-25, Giallorenzi et al. teaches parameters of data rates being calculated and reported); and outputting from the supervisor unit a code rate C, a set of codes $M = \{M_i\}$ for specifying constellations for sub-channels (col. 7 lines: 51-53, col. 9 lines: 14-25, fig. 4, Giallorenzi et al. teaches using binary channel coding technique, gray-mapping is used for constellation), an actual rate actually determined for a current transmission and an actual bit error rate (BER) actually determined for the current transmission (fig. 4, col. 3 –col. 4, col. 9 lines: 14-25, Giallorenzi et al. teaches bit error rate calculated for transmissions).

Regarding claim 13 is rejected as per claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-4, 7-11, and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giallorenzi et al. (US 7190683), and in view of Soong et al. (US 20030179727).

Consider claim 3. The method of Claim 2, Giallorenzi et al. teaches wherein, in case a starting information is a maximum transmit power and the Target_BER, the processing act further comprises the acts of:
calculating a maximum received power (col. 8 lines: 45-53, Giallorenzi et al.

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teaches power control protocol);

calculating a minimum SNR on a weakest sub-channel, for every number j of sub-channels considered and storing the result (col. 7 lines: 59-65, Giallorenzi et al. teaches SNR format for upstream and downstream are achievable using QPSK waveform depending of SNR results);

for every couple M/C, calculating a number of sub-channels having an SNR above threshold yielding a BER requested by the MAC layer (Soong et al.

teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]);

calculating the bit rate achievable using $N(k,i)$ sub-channels (Giallorenzi et al.

teaches bit rate achievable on a variety of frequency sub-channels col. 12 lines: 48-59);

finding a maximum M/C that yields the maximum bit rate (Soong et al. teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]); and

selecting and outputting a maximum couple M/C (abstract, Soong et al. teaches mobile dedicated power control sub-channel).

Consider claim 4. The method of Claim 2, wherein, in case a starting information is a maximum transmit power and the Target_Rate, the processing act further comprises the act of:

calculating a maximum receive power (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol);

for every M/C, calculating a number of sub-channels used to achieve the bit target rate (paragraph [0036], Soong et al. teaches about desired rate);

selecting the SNR on the worst sub-channel (paragraph [0052] and [0006],

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Soong et al. teaches it increases transmit power if the received SNR is less than the desired SNR);

calculated from a BER-SNR curve, the BER corresponding to the worst sub-channel for modulation of k and code-rate i (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER);

finding a minimum couple M/C (called $(M,C)_{\min}$) that yields the minimum value (fig. 14, Soong et al. teaches curve with minimum and highest value); and selecting and outputting minimum couple M/C (abstract, Soong et al. teaches mobile dedicated power control sub-channel).

Consider claim 8. The method of claim 1, further comprising the acts of: feeding a second set of input data including channel power transfer functions $H = \{ |H_{il}|^2 \}$: from the PHY layer to the supervisor unit (paragraph [0041], Soong et al. teaches figure 3b with supervisor unit of energy-based link supervision); processing the first and second set of input data for minimizing processing and transmission power in the OFDM wireless communication system (col. 8 lines: 45-53, Giallorenzi et al. teaches power control protocol); and outputting N , modulation, coding parameters and transmission power parameters to the PHY layer (col. 11 lines: 43-50, Giallorenzi et al. teaches PHY layer coding parameter and transmission power).

Consider claim 9. The method of Claim 8, wherein the feeding of the first set of input data comprises feeding a `Max_Delay` (paragraph [0041], Soong et al. teaches timer or limit of time for return of signal).

Consider claim 11. The method of Claim 8, wherein the outputting further

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comprising the act of outputting actual QoS data to the MAC layer (Giallorenzi et al. teaches on col. 4 lines: 10-17, MAC layer being enabled to the QoS data).

Consider claim 14. The method of claim 11, wherein the outputting act further comprises the act of outputting:

a MAC return comprising a Max available Rate (fig. 4, col. 9, Giallorenzi et al.

teaches MAC table with rates, hence, available rate); or

a Min available BER after the processing act (paragraph [0065] and [0066],

Soong et al. teaches base station sets channel quality and the target BER).

Consider claim 15. The method of claim 1, wherein the processing act is for minimizing processing and transmission power in a wireless communication network system and further comprises the act of finding N, the M/C couple and the ON sub-channels required to fit the Target_rate and the Target_BER requirements with a minimum power, given a current channel condition (Soong et al. teaches threshold for communication, paragraph [0009], [0011], [0015], [0038]).

Consider claim 16. The method of claim 15, wherein, in case a channel conditions prevent achieving a required QoS even with a maximum available transmission power a supervisor algorithm finds an M/C couple, a number and a position of ON sub-channels required to get the maximum rate compatible with the Target_BER requirement, given the current channel condition and the maximum power allowed by system specifications (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER), or

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a minimum BER compatible with the Target_Rate, given the current channel condition and the maximum power allowed by the system specifications (paragraph [0065] and [0066], Soong et al. teaches base station sets channel quality and the target BER).

Consider claim 17. An OFDM wireless communication system including a MAC layer and a PHY layer, said PHY layer including a supervisor unit, wherein the supervisor unit is configured to perform method of claim 1 (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Consider claim 18. A supervisor unit in the OFDM wireless communication network system including the MAC layer and the PHY layer including said supervisor unit (paragraph [0041], Soong et al. teaches figure 3b with supervisor unit of energy-based link supervision), wherein the supervisor unit is configured to perform the method of claim 1.

Consider claim 19. An interface unit in the OFDM wireless communication system including the MAC layer and the PHY layer, said PHY layer including a supervisor unit, said interface being located between the supervisor unit and the MAC layer, wherein said interface unit is configured to perform method of claim 1 (Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Consider claim 20. A computer-readable medium containing a computer-readable program for use in the OFDM wireless communication system including the MAC layer and the PHY layer, said PHY layer including a supervisor unit, wherein the program, when implemented in the supervisor and run in the

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supervisor unit, causes the supervisor to perform the method of claim 1
(Giallorenzi et al., col. 4 lines: 10-17, teaches interface with MAC and PHY layer).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diego Herrera whose telephone number is (571) 272-0907. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Diego Herrera/
Examiner, Art Unit 2617

/Lester Kincaid/
Supervisory Patent Examiner, Art Unit 2617